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Effect of COVID-19 anxiety on perceived risks and avoidance behaviors

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This study was presented as an oral presentation at the 11th International Health and Hospital Management Congress. In addition, it was deemed worthy of the best paper award among the oral presentations by the Congress Scientific Committee.

Abstract

Aim: The aim of this study was to determine the perceptions of individuals concerning the COVID-19 pandemic in Turkey and to try to slip out of this perception of the relationship between anxiety and avoidance behavior.

Material and Methods: A snowball sampling method was used in this study. Data were collected through an online questionnaire between March 26 and April 1, 2020. A total of 834 persons were surveyed from 81 cities in Turkey. The demographic questions created by the researchers and a perception scale about COVID-19 were used. The data were analyzed with SPSS 25.0 statistical program.

Results: Risk perception and anxiety levels of the participants during the COVID-19 pandemic were found to be statistically associated with gender, employment status, income level, general health insurance and the presence of chronic disease ($p < 0.05$). The majority of the participants (83.3%) considered the disease fatal and 59.1% were anxious. The anxiety levels of the participants played a mediator role between perceived risks and avoidance behaviors. Participants' risk perception for the COVID-19 pandemic was 4.22 ± 0.63, and their anxiety levels were above the average of 3.92 ± 0.71.

Discussion: The perceptions, beliefs, attitudes and psychological responses of communities with increased uncertainty and epidemic effects can act as a "vector" in the transmission of the disease.

Keywords

COVID-19; Anxiety; Perceived risk; Avoidance behavior; Health psychology

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Introduction

The World Health Organization (WHO) reported in the early days of 2020 that the world was facing a new coronavirus, a potential pandemic agent. Its etiological agent is the SARS-CoV-2 from the Coronaviridae family, located in the same subfamily as the SARS-CoV, which also appeared in China in November 2002 [1,2]. As the epidemic spreads rapidly, economic life might come to a halt, along with many uncertainties. This can cause anxiety and constant worry in individuals. It is known that there is a relationship between the way the disease is represented in the minds of individuals and the responses to the disease and adaptation to the disease [3,4]. Researches conducted in the past show that the anxiety of the public and health professionals has increased during epidemics [5,6]. In a study during the SARS pandemic, it was found that psychological reactions such as high levels of stress, helplessness, and post-traumatic symptoms were common in the sample [7]. The results of a longitudinal study conducted by Leung et al. (2005) also showed that the anxiety scores of the participants who perceived the possibility of contracting SARS disease or death due to this reason were high. Jones and Salathé (2009) showed that participants' anxiety levels related to H1N1 increased at the beginning of the epidemic and decreased, as expected, over time. One of the important findings of this research is that anxiety level plays an intermediary role in individuals' preventive behaviors [8]. There are many studies in the literature showing that the avoidance behaviors of threatened individuals increase in anxiety-triggering situations such as different types of flu pandemics [9,10].

The COVID-19 Pandemic is an internationally concerned public health emergency and poses a challenge to psychological resilience. Research data are needed to develop evidence-based strategies to reduce negative psychological effects and psychiatric symptoms during the pandemic. The aim of this research is to determine the public's perceptions about the nature of the COVID-19 pandemic, possible causes, control methods and attitudes towards vaccination, and to examine the effect of public anxiety on the perceived risk and individuals' avoidance behaviors during the first 14-day period, which early as seen from March 2020 in Turkey.

Material and Methods

Type of the Research

This study is a descriptive and cross-sectional study. The aim of this study was to determine the perceptions of the public about COVID-19 during the first 14 days of the quarantine process for the COVID-19 pandemic in Turkey and to determine the relationship between anxiety and avoidance behaviors. Ethics committee approval was taken for this study from XXX Etic Comitte (2020/07).

Data Collection

A demographic information form and a perception and attitude scale were used for data collection.

Demographic Information Form: This form included age, gender, educational levels, income levels, health insurance, working status and general questions about COVID-19. The general questions in this section are: "How deadly is COVID-19 disease?", "How many months do you think the epidemic will continue from now on?", "How much are you worried about getting COVID-19?" The predictions of the participants about epidemic disease were studied

Perception and Attitude Scale: The scale was prepared using the scale questions that Cırakoglu (2011) used in his research and whose reliability was valid [11]. The scale consists of four parts: (1) COVID-19 Risk Perception, (2) Perception about COVID-19 Causes, (3) Perception about COVID-19 Control, and (4) Vaccine Attitudes. The scale was designed as a 5-point Likert type (1=Strongly disagree to 5=Strongly agree). The higher scores on the scale indicate that the participant's belief in the relevant item has increased. Some items in the scale were written negatively and reversed before analysis. For each scale, the total variance and internal consistency coefficient were 52.62% and 0.69 for the perception subscale, 51.93% and 0.80 for the reasons subscale, 56.46% and 0.76 for the control subscale, and 55.93% and 0.82 for the vaccine attitude subscale, respectively.

Avoidance Behaviors Scale (ABS): It was prepared as a 5-point Likert-type 14-item scale developed by Cırakoglu (2011) to determine the behavioral and cognitive avoidance of the participants [11]. The scale has three sub-dimensions: "Avoiding Common Areas", "Cognitive Avoidance", "Avoiding Individual Contact". Participants were asked to mark how often they showed the behaviors defined in the scale items between 1 (I have never done this behavior) and 5 (I have done this behavior very often). An increase in the scores in this scale shows that avoidance behaviors are more frequent. Cronbach Alpha (α) value, which is the general reliability coefficient of the scale, was found to be 0.85. In this study, Cronbach Alpha (α) value was found to be 0.79.

State Trait Anxiety Inventory (STAI): The trait anxiety levels of the participants were developed by Spielberger et al. (1970) and adapted to Turkish by Öner and Le Compte (1975). The scale was developed to measure the anxiety experienced by individuals within the last seven days (Öner N, Le Compte A. State-Trait Anxiety Inventory handbook. Istanbul: Boğaziçi Üniversitesi; 1985 (in Turkish)). It consists of 20 items. Each item is scored from 1 (almost never) to 4 (almost always). Seven items are reversed from the analysis. The lowest possible score is 20, the highest score is 80, and the breakpoint is evaluated as 45 points. The increase in the scores obtained from the scale shows that anxiety is constantly increasing.

Data Collection Method

The data were collected online using Google forms via the Internet, taking into account the presence of quarantine due to the epidemic. Therefore, the geographical boundaries do not constitute an obstacle and the random error in the size of the population-sample is reduced.

Population and study sample

The universe of this study is individuals living in Turkey between March 26 and April 1, 2020, using a snowball sampling method. A total of 834 persons were surveyed from 81 cities.

Data Analysis

SPSS 25.0 was used. The Demographic Information Form was evaluated as frequency, percentage, and scale scores as mean, standard deviation. The Kolmogorov-Smirnov test was used for normality. The t-test, Oneway Anova test, Bonferroni

test, Hierarchical logistic regression were used with a 95% confidence interval and a significance level of p<0.05.

Limitations of the study

Collecting data cross-sectionally with Google forms due to the epidemic is the limitation of the research.

Results

The average age of 834 participants in the study was 39.68 ± 10.57 years, 27.8% were in the 31-40 age group and 59.1% were women; 41.4% (n=345) of the participants were civil servants, 62.8% were university graduates (n=524), 37.8% had a monthly income between 4001-6000 TL (n=315), 82% had a general health insurance (n=684); 37.9% (n=316) reported a chronic disease; 60.1% (n=501) reported that the the COVID-19 pandemic was very fatal; 59.1% (n=493) were very concerned about the pandemic, while 48.4% (n=404) evaluated their current health status as normal (Table 1).

The mean COVID-19 Perception and Attitude Scale score was 3.48 ± 0.9. The means of sub-dimensions were "Contagiousness" 4.15 ± 0.7, "Conspiracy / COVID-19 Reasons" 2.95 ± 0.7, "Environment / COVID-19 Reasons" 3.05 ± 0.7, "Faith / COVID-19 Reasons" 2.27 ± 1.16, "Control / COVID-19" 2.46 ± 0.7, "Personal Control / COVID-19 Reasons" 3.03 ± 0.6, "Attitude Against Vaccine" 2.96 ± 0.6. According to these findings, it was determined that the Covid-19 Perception and Attitude scale scores of the participants were high and the scores of belief, conspiracy and control sub-dimensions were low.The Cronbach-alpha coefficients of the scale for all dimensions ranged between 0.72 and 0.84 with a mean of 0.78 .

The mean Avoidance Behavior Scale score was 4.48±0.9, and the mean State-Trait Anxiety Inventory Scale score was 48.22±8.5. The means Avoidance Behavior Scale sub-dimensions were "Avoiding Common Areas" 4.29 ± 0.8, "Cognitive Avoidance" 2.28 ± 0.6, "Avoiding Individual Contact" 4.37 ± 0.6. Individual Contact Avoidance Scale scores were high, and cognitive avoidance subscales scores were low. The mean internal consistency coefficient was 0.82 (range 0.76 - 0.82) . According to these findings, Avoidance Behavior Scale score, State-Trait Anxiety Inventory Scale score, Avoiding Individual Contact sub-dimensions scores were high, and Cognitive Avoidance sub-dimensions scores were low.

Perceptions and attitudes, avoidance behaviors and trait anxiety behaviors of the participants did not differ in terms of gender (p>0.05); however, age (31-40 years), education level (university degree), monthly income (<2000 TL and 4001-6000 TL), current employment status (unemployed), social security and the presence of chronic disease had significant impacts (p<0.05), (Table 2).The effects of demographic variables such as monthly income, education level, social security and current status on perception and attitude towards the COVID -19 pandemic, avoidance behavior, and trait anxiety were found to be statistically significant with regression analysis (p <0.05). In addition, it was found that the perceived risk and attitude towards the COVID -19 pandemic (β =0.266 p<0.05) and the trait anxiety level (β =0.223 p<0.05) had a statistically significant effect on avoidance behavior. In addition, it was found that the effect of perception and attitude level on avoidance behavior decreased with the addition of trait anxiety level to the model (β =0.113 p<0.05), and trait anxiety (β =0.234 p<0.05) had an effect as a partial moderator (Table 3).

Table 1. Socio-demographic and risk perception for the COVID -19 outbreak (n = 834)

Variables	SS	n	%
Gender	Female	493	59.1%
	Male	341	40.9%
Age	18-30 years	148	17.7%
	31-40 years	232	27.8%
	41-50 years	155	18.5%
	51-60 years	134	16.2%
	61-70 years	97	11.6%
	71 years	68	8.12%
Education status	Literate	4	0.5%
	Primary Education	11	1.3%
	High School	103	12.4%
	University	524	62.8%
	Graduate	192	23%
Job	Civil Servant	345	41.4%
	Public Worker	20	2.4%
	Private Sector	221	26.5%
	My Own Business	44	5.3%
	Retired	53	6.4%
	Unemployed	34	4.1%
	Housewife	41	4.9%
	Student	76	9.1%
Monthly income	2000 TL and less	81	9.7%
	2001-4000 TL	203	24.3%
	4001-6000 TL	315	37.8%
	6001-8000 TL	235	28.2%
	8001 and more TL [1]	0	0%
How do you assess your health condition?	Very bad	0	0%
	Bad	15	1.8%
	I do not know	34	4.1%
	Middle	301	36.1%
	Good	404	48.4%
	Excellent	80	9.6%
Do you have social security?	General Health Insurance	684	82%
	Private Insurance	108	12.9%
	No Social Security	42	%5
Marital status	Married	466	55.9%
	Single	368	44.1%
In your opinion, how fatal is the COVID-19 outbreak?	Very fatal	501	60.1%
	Fatal	103	12.3%
	No idea	60	7.2%
	Not fatal	78	9.3%
	Not very fatal	92	11.1%
Do you have a chronic illness that has been diagnosed or treated?	Yes	316	37.9%
	No	518	62.1%
In your opinion, how many months does the outbreak (COVID-19) continue from now on?	1-3 months	323	38.7%
	4-6 months	278	33.3%
	7-9 months	136	16.3%
	9 months and above	97	11.6%
How worrying are you caught in the COVID-19 outbreak?	Never Worried	0	0%
	Not Worried	70	8.4%
	Worried	493	59.1%
	Very Worried	271	32.5%

[1] 1$=6.73 TL (Turkish Liras)

Table 2. Comparison of participants' demographic characteristics and perception and attitude, avoidance, State-Trait Anxiety Scale mean scores (n = 834)

	Perception and Attitude for COVID-19		Avoidance Behavior For COVID-19		State-Trait Anxiety Scale For COVID-19	
	$\bar{X}$	SS	$\bar{X}$	SS	$\bar{X}$	SS
Gender						
Female	3.49	.530	3.67	.704	43.36	5.97
Male	3.66	.711	3.69	.492	43.33	5.92
t	1.106		1.174		1.571	
P	.144		.118		.112	
Age						
18-30 years old	2.90	.000	3.50	.410	43.40	6,01
31-40 years	3.23	.693	3.69	.193	43.53	6,19
41-50 years	3.62	1.18	3.66	1.10	46.82	.989
51-60 years	3.19	.235	3.39	.265	48.56	5.21
61-70 years	3.41	.271	3.48	.247	43.29	4.25
71 years old	2.93	.125	2.76	.228	43.49	6.22
F	2.109		3.655		5.253	
P	.000*		.005*		.005*	
Education status						
Literate	3.20	.000	3.33	.000	39.25	5.21
Primary education	3.23	.605	4.09	.943	43.77	6.61
High school	3.38	.433	4.17	.677	44.27	5.84
University	3.63	.484	4.22	.836	49.16	5.69
Graduate	3.51	.483	4.25	.666	45.31	5.69
F	4.109		5.495		3.751	
P	.000*		.038*		.025*	
Monthly Income						
2000 TL and below	2.61	.106	3.59	.403	47.42	7.72
2001-4000 TL	2.59	.094	3.58	.556	43.63	5.48
4001-6000 TL	3.52	.254	3.67	.725	43.71	6.75
6001-8000 TL	3.42	.254	3.45	.415	45.17	5.45
8000 TL and above	3.4	.254	3.44	.654	45.28	5.47
F	3.253		3.505		4.213	
P	.000*		.040*		.012*	
Current Employment Status						
Civil servant	3.39	.510	3.63	.478	39.25	5.21
Public Worker	3.73	.605	4.09	.913	43.77	6.61
Private sector	4.38	.413	4.17	.776	46.27	5.81
My own business	4.63	.487	4.22	.836	49.66	5.64
Retired	3.51	.483	3.57	.966	45.11	5.67
Unemployed	4.20	.956	4.39	.887	49.25	5.31
Housewife	3.23	.623	3.61	.643	43.71	6.71
Student	3.38	.447	4.17	.617	46.27	5.82
F	4.223		3.718		4.613	
P	.000*		.045*		.032*	
Social security						
General health insurance	3.59	.630	3.67	.904	45.23	6.85
Special insurance	3.53	.311	3.61	.792	45.26	6.72
No insurance	3.78	.541	3.78	.896	48.47	6.89
F	3.648		2.664		3.587	
P	.014*		.046*		.028*	
Having Chronic Disease						
Yes	3.65	.520	3.71	.906	53.71	6.90
No	3.44	.583	3.59	.294	48.59	.629
t	3.974		3.906		4.128	
P	.038*		.000*		.012*	

* p < .05

Table 3. Demographic variables, perception and attitude, avoidance behavior and regression analysis of trait anxiety variables

	Independent variables	Dependent Variables	Standardized B	p	Adjusted R2	F Value
1.Regression	Gender	Perception and Attitude For COVID-19	.002	.867	.528	3.27
	Marital status		.003	.112		
	Education		.298	038*		
	Monthly income		.431	027*		
	Status		.417	000*		
	Social security		.232	000*		
2.Regression	Gender	Avoidance Behavior For COVID-19	.015	.129	.511	5.34
	Marital status		.002	.124		
	Education		.322	.000*		
	Monthly income		.264	.000*		
	Status		.294	.000*		
	Social security		.469	.000*		
3.Regression	Gender	Trait Anxiety For COVID-19	.006	.968	.696	6.04
	Marital status		.017	.547		
	Education		.523	.016*		
	Monthly income		.503	.038*		
	Status		.538	.000*		
	Social security		.387	.000*		
4.Regression	Perception and Attitude / Perceived Risk	Avoidance Behavior For COVID-19	.266	.000*	.133	5.38
5.Regression	Trait Anxiety For COVID-19	Avoidance Behavior For COVID-19	.223	.000*	.177	6.83
6.Regression	Perception and Attitude / Perceived Risk	Avoidance Behavior For COVID-19	.113	.000*	.402	9.38
	Trait Anxiety For COVID-19		.234	.000*		

* : p≤0.05

Discussion

This study was conducted with a Turkish sample to examine the effect of COVID-19 anxiety, which first appeared in Wuhan, China in December 2019, on perceived risk and avoidance behavior. As a result of the evaluation of the research data, it was determined that the total score average, avoidance of common areas, cognitive avoidance, personal contact avoidance, and trait anxiety levels were high. These findings are thought that participants are sensitive to this pandemic, they take into account the warnings made by state authorities, but uncertainty about this pandemic increases their anxiety. In the literature, it was found that similar outcomes have been found in epidemic diseases, especially in countries with uncertainties, such as COVID-19, where the treatment algorithm has not yet been clarified [12]. Various factors, including socio-demographic characteristics, social context and individual values can be effective in the perception of pandemics [9,13].

Various factors, including socio-demographic characteristics, social context and individual values, can be effective in the perception of pandemics [9,14]. When the perceptions and attitudes, avoidance behaviors and trait anxiety behaviors of COVID-19 according to demographic variables were analyzed, there was a statistically significant difference in terms of age,

education status, monthly income, employment status, social security, presence of chronic disease (P<0.05). This difference is for age, among those between the ages of 31 and 40, and those who are university graduates in terms of education status. It is also among the average points of those whose income is 2000 TL and below and 4001-6000 TL, and those who are unemployed and have no social security. The perceptions, beliefs, attitudes and psychological reactions of the communities in which uncertainties and the epidemic effect increase, may differ from society to society and demographic characteristics. For this reason, according to the results obtained from this study, perception and avoidance behaviors of the COVID-19 epidemic were found higher in individuals whose average age was not in the older age group and who had a high education level. It is thought that being educated in this age group is important in raising awareness of taking necessary precautions against the epidemic. However, the quarantine environment created by the pandemic indicates that production will stop, and economic crises will occur and unemployment will increase. Therefore, in this study, anxiety levels of low and middle income unemployed people without social security were higher. The results were determined to be compatible with similar studies in the literature [6,12,15].

Regression analyzes were performed to determine the effect of the demographic characteristics of the participants on avoidance behavior against the COVID-19 pandemic and the mediating role of anxiety between perceived risk and avoidance behavior against the COVID-19 pandemic. With this analysis, the effects of the participants' monthly income status, education level, social security, and current status on demographic variables on perception and attitude, avoidance behavior and trait anxiety were found to be statistically significant (p<0.05). In addition, the perceived risk and attitude towards the COVID-19 pandemic (β=0.266 p<0.05), and the level of trait anxiety (β=0.223 p<0.05) were found to have a statistically significant effect on avoidance behavior. In order to have a variable effect, the Perception and Attitude level for the independent variable COVID-19 must have a significant effect (4th regression) on Avoidance Behavior for the dependent variable, COVID-19. This significant effect should disappear or decrease with the inclusion of Trait Anxiety as an independent variable in the regression (6th regression). In the 6th regression model made for this purpose, the effect of perception and attitude level on avoidance behavior decreases by adding the level of trait anxiety to the model (β=0.113 p<0.05) and a partial intermediate variable of trait anxiety (β=0.234 p<0.05) found to be effective. According to our findings, participants in the first psychological response of the general public, perceived the pandemic just one week after the WHO declared an emergency state of international concern and the COVID-19 pandemic in the country, their attitudes and anxiety levels were high. It was determined that the risk perceived by the participants affected their avoidance behaviors against this disease through their high level of anxiety. These results were found to be similar to the literature [2,14,16]. The anxiety levels of the participants were determined to have an intermediary role between risk and avoidance behaviors. Therefore, health authorities should identify high-risk groups based on socio-demographic information for early psychological interventions. It can be suggested that government and health authorities provide transparent and accurate health information during the pandemic to reduce the impact of rumors, so that higher satisfaction with the health information received may be associated with lower psychological effects of the pandemic and lower levels of stress, anxiety and depression.

Scientific Responsibility Statement
The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement
All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest
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